

WHAT IS CLAIMED IS:

1. A cheese flavoring comprising:
- 5           A) volatile component contents comprising
- i) from 5 to 200 parts by weight of compounds  
          having acidic and acetic-acid-like flavors (Group 1);
- ii) from 0.1 to 10.0 parts by weight of compounds  
          having milk-like and creamy flavors or cream-like or caramel-  
          like flavors (Group 2);
- 10           iii) from 0.03 to 6.0 parts by weight of compounds  
          having fruity and flowery flavors (Group 3);
- iv) from 0.01 to 15.0 parts by weight of  
          compounds having strong flavors, blue mold flavors and rind  
          flavors (Group 4);
- 15           v) from 0.003 to 15.0 parts by weight of  
          compounds having fatty flavors (Group 5);
- vi) from 0 to 0.05 parts by weight of compounds  
          having animal flavors (Group 6);
- vii) from 0.0003 to 0.6 parts by weight of  
20           compounds having roasted flavors and cocoa-like flavors  
          and also smoky flavors (Group 7);
- viii) from 0.00005 to 0.1 parts by weight of  
          compounds having vegetable-like flavors (Group 8);
- ix) from 0 to 0.1 parts by weight of compounds  
25           having mushroom-like flavors or soft-cheese-like flavors  
          (Group 9);
- B) non-volatile component contents comprising:
- i) from 100 to 480 parts by weight of compounds  
          having the taste impression salty (Group 10);
- 30           ii) from 50 to 550 parts by weight of compounds  
          having the taste impression sour (Group 11);

TOP SECRET 65072860

- 5
- iii) from 5 to 200 parts by weight of compounds having astringent, bitter notes (Group 12);
  - iv) from 0 to 100 parts by weight of compounds having the taste impression sweet (Group 13); and
  - v) from 0 to 140 parts by weight of compounds having a glutamate-like taste impression (umami) (Group 14).

- 10 2. A cheese flavor according to Claim 1 wherein the cheese flavor is a cheddar cheese flavor, said flavor comprising
- 15 A) volatile component contents comprising
    - i) from 20 to 200 parts by weight of compounds having acidic and acetic-acid-like flavors (Group 1);
    - ii) from 0.5 to 10 parts by weight of compounds having milky and creamy flavors or cream-like or caramel-like flavors (Group 2);
    - iii) from 0.1 to 2.0 parts by weight of compounds having fruity and flowery flavors (Group 3);
    - 20 iv) from 0.05 to 0.8 parts by weight of compounds having strong flavors, blue mold flavors and rind flavors (Group 4);
    - v) from 0.04 to 1.0 parts by weight of compounds having fatty flavors (Group 5);
    - vi) from 0.0001 to 0.005 parts by weight of compounds having animal flavors (Group 6),
    - 25 vii) from 0.002 to 0.2 parts by weight of compounds having roasted flavors and cocoa-like flavors and smoky flavors (Group 7);
    - viii) from 0.001 to 0.06 parts by weight of compounds having vegetable-like flavors (Group 8);
    - 30

09871059 053101

ix) from 0.001 to 0.08 parts by weight of compounds having mushroom-like flavors or soft-cheese-like flavors (Group 9); and

B) non-volatile component contents comprising

i) from 100 to 350 parts by weight of compounds having the taste impression salty (Group 10);

ii) from 80 to 280 parts by weight of compounds having the taste impression sour (Group 11),

iii) from 5 to 40 parts by weight of compounds having astringent, bitter notes (Group 12);

iv) from 0 to 50 parts by weight of compounds having the taste impression sweet (Group 13); and

v) from 0 to 80 parts by weight of compounds having a glutamate-like taste impression (umami) (Group 14).

3. A cheese flavoring according to Claim 1, wherein said cheese flavor is a Parmesan flavor, said flavor comprising:

A) volatile component contents comprising

i) from 5 to 75 parts by weight of compounds having acidic and acetic-acid-like flavors (Group 1);

ii) from 0.2 to 5.0 parts by weight of compounds having milky and creamy flavors or cream-like or caramel-like flavors (Group 2);

iii) from 0.2 to 3.0 parts by weight of compounds having fruity and flowery flavors (Group 3);

iv) from 0.1 to 2.6 parts by weight of compounds having strong flavors, blue mold flavors and rind flavors (Group 4);

v) from 0.04 to 0.8 parts by weight of compounds having fatty flavors (Group 5);

09871059 053101  
T07E50 65012850

vi) from 0.001 to 0.02 parts by weight of compounds having animal flavors (Group 6);

vii) from 0.03 to 0.5 parts by weight of compounds having roasted flavors and cocoa-like flavors and smoky flavors (Group 7);

viii) from 0.0005 to 0.006 parts by weight of compounds having vegetable-like flavors (Group 8);

ix) from 0 to 0.014 parts by weight of mushroom-like flavors or soft-cheese-like flavors (Group 9);

B) non-volatile component contents comprising

i) from 200 to 350 parts by weight of compounds having the taste impression salty (Group 10);

ii) from 200 to 400 parts by weight of compounds having the taste impression sour (Group 11);

iii) from 70 to 200 parts by weight of compounds having astringent, bitter notes (Group 12);

iv) from 0 to 100 parts by weight of compounds having the taste impression sweet (Group 13); and

v) from 20 to 100 parts by weight of compounds having a glutamate-like taste impression (umami) (Group 14).

4. A cheese flavoring according to Claim 1, wherein yeast extract and/or milk fat or vegetable fat products are added as a flavor enhancer and for rounding.

5. A cheese flavoring according to Claim 1, wherein said compounds having acidic and acetic-acid-like flavors (Group 1) is selected from the group consisting of carboxylic acids having from 2 to 16 carbon atoms.

09871059.053101  
TOTAL 55072860

6. A cheese flavoring according to Claim 5, wherein said carboxylic acids having from 2 to 16 carbon atoms are selected from the group consisting of acetic acid, propionic acid, butyric acid, valeric acid, caprylic acid, caproic acid, capric acid, lauric acid and myristic acid.

5

7. A cheese flavoring according to Claim 1, wherein said compounds having milk-like and creamy flavors or cream-like or caramel-like flavors (Group 2) are selected from the group consisting of saturated and unsaturated  $\delta$ - and  $\gamma$ -lactone having 6 to 14 carbon atoms, hydroxy ketones and diketones having 4 to 8 carbon atoms and aromatic aldehydes.

10

8. A cheese flavoring according to Claim 7, wherein said saturated and unsaturated  $\delta$ - and  $\gamma$ -lactone having 6 to 14 carbon atoms are selected from the group consisting of jasmine lactone,  $\delta$ -decalactone,  $\delta$ -octalactone,  $\delta$ -undecalactone,  $\delta$ -dodecalactone and  $\delta$ -tetradecalactone and  $\gamma$ -caprolactone,  $\gamma$ -heptalactone,  $\gamma$ -octalactone,  $\gamma$ -decalactone and  $\gamma$ -dodecalactone.

15

9. A cheese flavoring according to Claim 1, wherein said compounds having fruity and flowery flavors (Group 3) are selected from the group consisting of ethyl, propyl and butyl esters of unbranched and branched carboxylic acids having 2 to 12 carbon atoms, saturated, unsaturated, unbranched and branched alcohols and aldehydes.

20

25

10. A cheese flavoring according to Claim 9, wherein said ethyl, propyl and butyl esters of unbranched and branched carboxylic acids having 2 to 12 carbon atoms are selected from the group consisting of ethyl propionate, ethyl butyrate, ethyl caprylate, ethyl caprate, ethyl caproate, ethyl isobutyrate, ethyl isovalerate and also propyl caprylate and butyl acetate.

30

05071059 053404

11. A cheese flavoring according to Claim 9, wherein said saturated, unsaturated, unbranched and branched alcohols is selected from the group consisting of 2-pentanol, isoamyl alcohol, hexanol, methyl 2-methylbutyrate, 3-methyl-2-butenol and 2-phenylethyl alcohol.

12. A cheese flavoring according to Claim 9, wherein said aldehyde is selected from the group consisting of benzaldehyde, phenylacetaldehyde and (E)-2-phenylbutenal.

13. A cheese flavoring according to Claim 1, wherein said compounds having strong flavors, blue mold flavors and rind flavors (Group 4) are 2-alkanones and 2-alkanols having 5 to 12 carbon atoms.

14. A cheese flavoring according to Claim 13, wherein said 2-alkanones are selected from the group consisting of 2-pentanone, 2-heptanone, 2-octanone, 2-decanone and 2-nonanone.

15. A cheese flavoring according to Claim 13, wherein said 2-alkanols are selected from the group consisting of 2-heptanol and 2-nonanol.

16. A cheese flavoring according to Claim 1, wherein said compounds having fatty and creamy flavors (Group 5) are unbranched aliphatic aldehydes and alcohols having from 7 to 14 carbon atoms, unsaturated aldehydes having 8 to 15 carbon atoms and 2-alkanones having 6 to 16 carbon atoms and esters of long-chain unbranched fatty acids.

17. A cheese flavoring according to Claim 1, wherein said compounds having animal flavors (Group 6) are selected from the group

09871059 053101

consisting of nitrogen compounds, sulfur compounds, and branched fatty acids.

18. A cheese flavoring according to Claim 1, wherein said  
5 compounds having roasted flavors and cocoa-like flavors and also smoky  
flavors (Group 7) are selected from the group consisting of pyrazines  
which are monosubstituted or polysubstituted (monosubstituted to  
trisubstituted) with lower alkyl groups, branched aldehydes having 4 and 5  
carbon atoms, phenols and alkylfurans.

10

19. A cheese flavoring according to Claim 1, wherein said  
compounds having vegetable-like flavors (Group 8) are selected from the  
group consisting of lower-alkyl-substituted thio compounds (1 to 4 carbon  
15 atoms), thiols and thioaldehydes.

20. A cheese flavoring according to Claim 1, wherein said  
compounds having mushroom-like flavors or soft-cheese-like flavors  
(Group 9) are selected from the group consisting of saturated and  
20 unsaturated alcohols and ketones having 8 carbon atoms.

21. A cheese flavoring according to Claim 1, wherein said  
compounds having the taste impression salty (Group 10) are salts having  
cations selected from the group consisting of sodium, ammonium,  
25 potassium, magnesium and calcium and anions such as chloride,  
hydrogen phosphate, dihydrogen phosphate, acetate and sulfate.

22. A cheese flavoring according to Claim 1, wherein said  
compounds having the taste impression sour (Group 11) are inorganic  
30 hydroxides.

T07650-05072860

23. A cheese flavoring according to Claim 1, wherein said compounds having astringent, bitter notes (Group 12) are selected from the group consisting of L-amino acids, peptides and unsaturated fatty acids having 16 to 22 carbon atoms.

24. A cheese flavoring according to Claim 1, wherein said compounds having the taste impression sweet (Group 13) are selected from the group consisting of carbohydrates and L-amino acids.

25. A cheese flavoring according to Claim 1, wherein said compounds having a glutamate-like taste impression (Group 14) are selected from the group consisting of L-amino acids and peptides based on amino acids.

26. A food product containing a cheese flavoring which comprises:

A) volatile component contents comprising

i) from 5 to 200 parts by weight of compounds having acidic and acetic-acid-like flavors (Group 1);

ii) from 0.1 to 10.0 parts by weight of compounds having milk-like and creamy flavors or cream-like or caramel-like flavors (Group 2);

iii) from 0.03 to 6.0 parts by weight of compounds having fruity and flowery flavors (Group 3);

iv) from 0.01 to 15.0 parts by weight of compounds having strong flavors, blue mold flavors and rind flavors (Group 4);

v) from 0.003 to 15.0 parts by weight of compounds having fatty flavors (Group 5);

vi) from 0 to 0.05 parts by weight of compounds having animal flavors (Group 6);

09871059 053101



vii) from 0.0003 to 0.6 parts by weight of compounds having roasted flavors and cocoa-like flavors and also smoky flavors (Group 7);

viii) from 0.00005 to 0.1 parts by weight of compounds having vegetable-like flavors (Group 8);

ix) from 0 to 0.1 parts by weight of compounds having mushroom-like flavors or soft-cheese-like flavors (Group 9);

B) non-volatile component contents comprising:

i) from 100 to 480 parts by weight of compounds having the taste impression salty (Group 10);

ii) from 50 to 550 parts by weight of compounds having the taste impression sour (Group 11);

iii) from 5 to 200 parts by weight of compounds having astringent, bitter notes (Group 12);

iv) from 0 to 100 parts by weight of compounds having the taste impression sweet (Group 13); and

v) from 0 to 140 parts by weight of compounds having a glutamate-like taste impression (umami) (Group 14).

27. A food product according to Claim 26, wherein said cheese flavor is a cheddar cheese flavor, said flavor comprising

A) volatile component contents comprising

i) from 20 to 200 parts by weight of compounds having acidic and acetic-acid-like flavors (Group 1);

ii) from 0.5 to 10 parts by weight of compounds having milky and creamy flavors or cream-like or caramel-like flavors (Group 2);

iii) from 0.1 to 2.0 parts by weight of compounds having fruity and flowery flavors (Group 3);

09871059 053101  
T0150 65012850

iv) from 0.05 to 0.8 parts by weight of compounds having strong flavors, blue mold flavors and rind flavors (Group 4);

v) from 0.04 to 1.0 parts by weight of compounds having fatty flavors (Group 5);

vi) from 0.0001 to 0.005 parts by weight of compounds having animal flavors (Group 6),

vii) from 0.002 to 0.2 parts by weight of compounds having roasted flavors and cocoa-like flavors and smoky flavors (Group 7);

viii) from 0.001 to 0.06 parts by weight of compounds having vegetable-like flavors (Group 8);

ix) from 0.001 to 0.08 parts by weight of compounds having mushroom-like flavors or soft-cheese-like flavors (Group 9); and

B) non-volatile component contents comprising

i) from 100 to 350 parts by weight of compounds having the taste impression salty (Group 10);

ii) from 80 to 280 parts by weight of compounds having the taste impression sour (Group 11),

iii) from 5 to 40 parts by weight of compounds having astringent, bitter notes (Group 12);

iv) from 0 to 50 parts by weight of compounds having the taste impression sweet (Group 13); and

v) from 0 to 80 parts by weight of compounds having a glutamate-like taste impression (umami) (Group 14).

28. A food product according to Claim 26, wherein said cheese flavor is a Parmesan cheese flavor, said flavor comprising:

A) volatile component contents comprising

- 5
- i) from 5 to 75 parts by weight of compounds having acidic and acetic-acid-like flavors (Group 1);
- ii) from 0.2 to 5.0 parts by weight of compounds having milky and creamy flavors or cream-like or caramel-like flavors (Group 2);
- iii) from 0.2 to 3.0 parts by weight of compounds having fruity and flowery flavors (Group 3);
- iv) from 0.1 to 2.6 parts by weight of compounds having strong flavors, blue mold flavors and rind flavors (Group 4);
- 10
- v) from 0.04 to 0.8 parts by weight of compounds having fatty flavors (Group 5);
- vi) from 0.001 to 0.02 parts by weight of compounds having animal flavors (Group 6);
- 15
- vii) from 0.03 to 0.5 parts by weight of compounds having roasted flavors and cocoa-like flavors and smoky flavors (Group 7);
- viii) from 0.0005 to 0.006 parts by weight of compounds having vegetable-like flavors (Group 8);
- 20
- ix) from 0 to 0.014 parts by weight of compounds having mushroom-like flavors or soft-cheese-like flavors (Group 9);
- B) non-volatile component contents comprising
- 25
- i) from 200 to 350 parts by weight of compounds having the taste impression salty (Group 10);
- ii) from 200 to 400 parts by weight of compounds having the taste impression sour (Group 11);
- iii) from 70 to 200 parts by weight of compounds having astringent, bitter notes (Group 12);
- 30
- iv) from 0 to 100 parts by weight of compounds having the taste impression sweet (Group 13); and

09871059.053101

~~v) from 20 to 100 parts by weight of compounds  
having a glutamate-like taste impression (umami)  
(Group 14).~~

Add a<sup>7</sup>  
Add B<sup>2</sup><sup>7</sup>

09871059-053101  
T07E50-6507860